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Applicants: Ali Kaan Kalkan et al.
Title: Nanoparticle Coated Nanostructured Surfaces etc.
Preliminary Amendment

Please replace paragraph starting on line ³13 of page 8 and ending on line 30 of page 8 with the following amended paragraph:

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9/11/10

A non-vacuum-based, non-collodial chemistry-based method of synthesizing metal nanoparticles and a nanoparticle-nanostructured material composite obtained by that method are disclosed hereinbelow. Applying the methods of this invention, nanoparticles of certain metals, such as but not limited to Au, Ag, Cu, Pd, and Pt, their alloys and compounds, can be controllably synthesized on the surfaces of nanostructured, porous void-column films by exposure of this material to the salt solutions of these metals. These composite nanoparticle/ (in one embodiment, void-column film) film substrates have been found to yield strong surface plasmon optical absorption and surface enhanced Raman scattering (SERS). Since the method of this invention does not require any reducing agents, coating agents, or catalysts to form the metal nanoparticles, it is very attractive. These particles may be immobilized on the nanostructured material or the material may be used to generate the particles for injection into some fluid flow environment. The metal nanoparticles can be coating-free, immobilized, and disbursed on a surface. The surface may involve anti-reflection systems and reflection coatings for further optical enhancement. The metal nanoparticle creation reaction of this invention is attributed to galvanic displacement, where the film surface itself serves as the reducing agent and electron source for reduction of the metal bearing medium; e.g., a metal salt. In some embodiments of the present invention no HF etching or oxide removal is necessary for nanoparticle forming to occur and, also, no metal coating (catalyst) is needed.